

CONCERA™ CP8480

Rheology Modifying Water Reducer

What is CONCERA CP8480?

CONCERA CP8480 is a patent pending rheology modifying polycarboxylate based water reducer that enables the production of Control Flow Concrete with minimal or no segregation using unmodified conventional mix designs. When CONCERA CP8480 is used in these mix designs, minimal or no mechanical consolidation, including vibration, is required. CONCERA CP8480 is a component of GCP's Control Flow Concrete System which is a new concrete category that GCP is promoting to the industry with slump flows that reside between conventional and self-consolidating concrete. CONCERA CP8480 is formulated primarily for use in ready-mix concrete applications where increased flowability, excellent rheology and segregation resistance properties are desired.

What are the advantages and benefits of CONCERA CP8480?

CONCERA CP8480 imparts many desirable properties to Control Flow Concrete including segregation resistance, stability, improved passing and filling ability, excellent tolerance to moisture variation and extended slump life. CONCERA CP8480 also readily enables jobsite concrete to be re-tempered with water to restore slump lost during transit. CONCERA CP8480 has minimal impact on other concrete properties including early and later age compressive strength and drying shrinkage while initial time of set and total bleed may slightly increase depending on specific conditions.

What are the differences between self-consolidating concrete (SCC) and Control Flow Concrete?

Self-consolidating concrete (SCC) is highly flowable non segregating concrete that can be spread into place, fill formwork and encapsulate formwork without using mechanical consolidation such as vibration. SCC slump flows are typically in the 450 mm to 820 mm range and are specified by application requirements. Control Flow Concrete is similar to SCC, but with slump flow values in the 400 mm to 635 mm) range that will require minimal external energy to properly consolidate. (**Note:** 230 mm slump standard concrete typically has a slump flow of approximately 400 mm. A primary difference between SCC and Control Flow Concrete is SCC typically requires specifically designed high cement factor, high fine to coarse aggregate ratios using smaller nominal size coarse aggregate mix designs, while Control Flow Concrete often uses conventional mix designs.

What is the difference between CONCERA CP8480 and CONCERA SA8470?

CONCERA CP8480 and CONCERA SA8470 are both used to produce Control Flow Concrete. CONCERA CP8480 is an ASTM C494 Type A water reducer (> 5% water reduction) that is typically used in combination with a polycarboxylate based mid or high range water reducer to produce Control Flow Concrete. Prior to CONCERA CP8480 addition, slumps are typically in the 127 to 203 mm range. CONCERA CP8480 is formulated with latest generation patent pending best in class rheology modifying agents that are field proven to provide consistent robust performance with a wide range of materials, mix designs and conditions. CONCERA CP8480 is formulated for use in non air entrained concrete ONLY.

CONCERA SA8470 is primarily a ASTM C494 Type F high range water reducer (>12% water reduction) that is typically used as a stand-alone product to produce Control Flow Concrete. Typical CONCERA SA8470 dosage rates range from 800 to 2100 mL/100 kg) and slumps prior to CONCERA SA8470 addition are typically less than 100 mm. CONCERA SA8470 is formulated for use in non air entrained and air entrained concrete.

Can slight mix design adjustments improve the rheology, stability and segregation resistance properties of CONCERA CP8480 concrete?

In most cases, adding CONCERA CP8480 to a conventional mid range or high range water reducer mix design will increase slump flows to 400 mm to 635 mm and provide excellent rheology, stability and segregation properties. However, specific characteristics of the conventional mix design can affect the overall properties of CONCERA CP8480 Control Flow Concrete. These characteristics include total cementitious, water, coarse aggregate, fine aggregate and plastic air contents along with coarse aggregate nominal size, angularity and gradation. If some segregation or instability is observed with CONCERA CP8480 Control Flow Concrete, slight mix design modifications can be made to improve overall rheology. First, most conventional MRWR/HRWR mix designs are produced in the 130-200 mm slump range and CONCERA CP8480 has built in water reducer capability to increase 130 mm slump concretes up to the highly flowable 400 mm to 635 mm range. Therefore, since most CONCERA CP8480 mix designs already contain a PC based MRWR or HRWR, rheology improvements can be realized by

slightly reducing the PC based MRWR/HRWR dosage rate and increasing the CONCERA CP8480 dosage rate. This adjustment will increase the total amount of rheology modifier in the concrete. Other potential modifications include slightly increasing the FA/CA ratio, reducing the W/C ratio and decreasing nominal coarse aggregate size. Technical Bulletin 1703 discusses these modifications in detail.

How does using CONCERA CP8480 compare to using a viscosity modifying agent (VMA) with a mid or high range water reducers?

CONCERA CP8480 is formulated with best in class VMA technology and ASTM C494 Type A water reducing capability while most VMA's (such as V-MAR3) are ASTM C494 Type S viscosity modifying agent (no water reducing capability). Therefore, since CONCERA CP8480 has built in water reduction capability, a lower dose of the base mid or high range water reducer will be required. CONCERA CP8480 will also provide superior rheology, segregation resistance, tolerance to water fluctuation, slump retention over time and allows for jobsite concrete to be retempered with water to restore slump lost during transit.

How do I transport and pump CONCERA CP8480 Control Flow Concrete?

CONCERA CP8480 Control Flow Concrete can be transported using conventional methods, but some precautions should be considered due to the high fluidity of the mix. When CONCERA CP8480 Control Flow Concrete is transported to a jobsite in a ready-mix truck, the concrete volume should not exceed 80% of the maximum drum capacity per ASTM C94. This will ensure no spillage on sloped grades during transit. There are no restrictions related to pumping CONCERA CP8480 Control Flow Concrete and pump pressure reductions will typically make it easier to pump CONCERA CP8480 Control Flow Concrete compared to conventional concrete. It is recommended pump pressures be gradually increased since very high initial pump pressures can cause segregation with Control Flow Concretes.

How do I place CONCERA CP8480 Control Flow Concrete in formed concrete applications?

With CONCERA CP8480 Control Flow Concrete formed concrete applications, it is important that formwork be watertight and grout-tight (non leaking) to prevent honeycombing and other surface defects. Form pressures will also be higher, compared to conventional concrete, due to the highly flowable characteristics and often faster than usual casting rates. Maximum lateral pressure and its rate of drop over time is impacted by the mix design consistency, rheology, thixotropy, casting rate and ambient and concrete temperature. Therefore, with current available information, a conservative approach should be to design formwork for full liquid head, in accordance with ACI 347. It is recommended Control Flow Concrete mix designs be field tested prior to job start up (mock-up), preferably through plant production equipment and with actual casting into simulated formwork.

How do I place and finish CONCERA CP8480 Control Flow Concrete in slab on grade applications.

Placing and finishing CONCERA CP8480 Control Flow Concrete in slab on grade applications is typically both easier and somewhat different, compared to conventional concrete. In general, ACI 302.1- Guide to Concrete Floor and Slab Construction guidelines should be followed when placing a slab using CONCERA CP8480 Control Flow Concrete. ACI 302.1 Section 8.4 Table 8.4.1 recommendations will require modification to allow >130 mm maximum slumps. Control Flow Concrete should be discharged continuously from one location and allowed to fully flow before moving to the next pour location. The intent should be to allow Control Flow Concrete to fill forms and self-level as much as possible on its own, followed by minimal mechanical consolidation such as raking and vibration. Control Flow Concrete can be poured against concrete that has slightly gelled, but should be vibrated to avoid pour lines. If needed, screeds, vibratory screeds and bull floats used on conventional concrete can be used to level Control Flow Concrete. Control Flow Concrete will accept any type of final finish, including magnesium float swirl, steel trowel or broom.

Is CONCERA CP8480 compatible with all GCP and competitive admixtures?

CONCERA CP8480 is fully compatible with all GCP commercially available admixtures except naphthalene based admixtures including DARACEM 19. It is also expected CONCERA CP8480 will be compatible with most standard competitive admixtures. However, it is recommended pre-job testing with specific concrete mix designs be conducted to verify cement, supplemental cementitious materials (SCM's), aggregate and admixture compatibility and performance.

What is the recommended batch sequencing for CONCERA CP8480?

In most cases, it is recommended that CONCERA CP8480 be added to the concrete mix near the end of the batch sequence for optimal performance. Different sequencing may be used if testing shows better performance.

CONCERA CP8480 should not come in direct contact with any other admixture during batching.

When and where is CONCERA CP8480 available?

CONCERA CP8480 is commercially available in the Middle East. CONCERA CP8480 samples are available for testing through GCP Customer Service:
phone: +971 4 2329901; email: meinfo@gcpat.com

What is the pricing of CONCERA CP8480?

Contact your Product or Sales Manager for CONCERA CP8480 pricing in your territory.

What is CONCERA CP8480 status with ASTM testing and certification?

Final one year ASTM C494 Type A report will be available during 2018.

gcpat.com | Customer Service: Tel +971 4 2329901 | Fax +971 4 2329940

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GCP Applied Technologies Inc., 62 Whittemore Avenue, Cambridge, MA 02140 USA.

Emirates Chemicals LLC, Festival Tower, Suite 1701, Dubai Festival City, P.O. Box 5006, Dubai, United Arab Emirates.

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